

# STAFF SUMMARY SHEET

	TO	ACTION	SIGNATURE (Surname), GRADE AND DATE		TO	ACTION	SIGNATURE (Surname), GRADE AND DATE
1	DFMI Dept Head	Approve	<i>[Signature]</i> Lt Col. 12 Mar 13	6			
2	DFER	Review	<i>[Signature]</i> Lt Col. 17 Mar 13	7			
3	DFMI	Action		8			
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## SUMMARY

1. PURPOSE: To provide security and policy review of the attached documents prior to public release.

2. BACKGROUND: Cadets Joshua Huckabee, Gordan Lang, Joseph Shields, Brandon Shoenfeld, and Vincent Jovene were Military and Strategic Studies majors enrolled in our department's MSS 498 capstone course and their essays in this issue of Airman Scholar Journal represent their senior thesis work from Spring 2012. The final article is a book review by Cadet Edward Boylan, an MSS student in a senior core course. Note that the first article in this issue (Thomas Drohan, "Core Relevance at the Air Force Academy") was previously cleared for public release for a conference presentation in 2011.

Titles: 2) "Active Learning and the Rising Generation of Air Force Officers," 3) "Hands on Keyboard: Considerations for a Cyber Weapons School," 4) "Siezing the Ultimate High Ground: Weaponizing Space," 5) "An Airplane for all Seasons," 6) "Personnel Recovery: CV-22 Expansion Pack;" and 7) a book review of "War Made New."

Issue overview: Cadet Joshua Huckabee argues for improved simulation scenarios in the Cadet Battle Lab, DFMI's premier networked classroom. Cadet Gordan Lang follows with his proposal for a joint military cyber school to train the rising generation of cyber warriors. Cadet Joseph Shields argues the merits of weaponizing space. Cadet Brandon Shoenfeld argues that the Air Force should purchase the A-29 Super Tucano over the AT-6 Texan II built by a US-based company, and interestingly, the Air Force just announced the A-29 as it's choice, validating Brandon's argument. Cadet Vincent Jovene also make an airframe argument for Combat Search and Rescue, advocating the purchase of CV-22 Osprey's to augment the HH-50 rescue fleet. Lastly, our book review by Cadet Edward Boylan covers a primary text used in MSS 416, in which he was enrolled as a Humanities major.

Release Information: release for web-based publication in the e-journal entitled: Airman Scholar Journal (ASJ)

Recommended Distribution Statement: Distribution A, Approved for public release, distribution unlimited.

3. RECOMMENDATION: Sign Approve/Review blocks above indicating documents are suitable for public release. Suitability is based solely on the document being unclassified, not jeopardizing DOD interests, nor inaccurately portraying official policy.

*[Signature]*

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# AN AIRPLANE FOR ALL SEASONS

## AN EVALUATION OF THE MOST APPROPRIATE AIRCRAFT FOR THE LIGHT ATTACK MISSION

BRANDON SCHOENFELDT

In October 1994, Air Force Special Operations Command (AFSOC) fielded the 6th Special Operations Squadron (6 SOS), the first-ever USAF squadron dedicated to the foreign internal defense (FID) and coalition support mission areas.<sup>1</sup> The creation of this specialized unit demonstrated the increased need for an advisory group capable of training and equipping foreign militaries to enable them to defend their countries through the use of airpower. Throughout much of airpower history, supporting and teaching foreign militaries the most effective tactics, techniques, and procedures (TTPs) for employing their aircraft has been viewed as a mission with significant military and political implications.

The underlying problem with training foreign militaries is that in order to have experts on foreign aircraft, the United States also must own and operate these aircraft. Special operations consist of the ability to adapt and overcome in any area of warfare; however, the potential of the US Air Force "to adapt" has been impaired by a failure to develop a light attack aircraft (LAS) with significant FID capabilities. The absence of such an aircraft is impairing the FID mission. As recently stated by Maj Gen Richard Comer, "The

Air Force stands at a fork in the road, deciding how much of its resources it should devote to the current war and its irregular nature [i.e., Afghanistan], and how much to the threats of a peer competitor challenging its dominance of air and space."<sup>2</sup> The decision to select an aircraft to help train the Afghan



Embraer A-29 Super Tucano

Army Air Corps has been made, but because of subsequent controversy over the selection process, acquisition of a LAS aircraft has been delayed. This troubling situation then leads to the question: "In an era of increasing budget cuts, has the United States Air Force selected the most appropriate aircraft for the foreign internal defense and light attack mission?"

### Background and Significance of the Problem

The Air Force has had a long standing engagement with the foreign internal defense mission. "With roots in special air warfare

dating back to the Vietnam War and even as far back as the Second World War, the 6th SOS was created to advise, train, and assist foreign aviation forces in the application of airpower in internal defense and development."<sup>3</sup> A principal challenge involves not so much the importance of foreign internal defense, but rather acquisition of the most appropriate aircraft to conduct that mission. Third world countries cannot operate the United States' F-16s nor can they handle the maintenance and repairs of such an aircraft. On the other hand, the US Air Force seems institutionally predisposed to fast jets, American-made products, and sophisticated aircraft generally. "Since its inception...the 6th SOS has been plagued by a host of difficulties in fulfilling the vision of its creators, the most salient of which stem from the question of whether the squadron should have aircraft appropriate to its third world mission."<sup>4</sup> This problem has become increasingly urgent and involves decisions about which aircraft would be the most effective, and whether the FID mission even requires a light attack aircraft. However, the 6th SOS and the Air Force currently do not maintain

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the most appropriate aircraft for the FID mission in Afghanistan and other countries. Lt. Col Wray Johnson notes, "Aircraft remain critical to the original vision of what has become the 6th SOS...."<sup>5</sup>

This assertion remains true not only for the 6th SOS but for the Air Force as a whole during the current era of contingency operations and the longer-term threat of involvement in such operations in the future.<sup>6</sup>

Several definitions are crucial to understanding the capabilities of LAS/FID aircraft as well as comprehending the needs of the FID mission:

Foreign Internal Defense (FID)-- According to Joint Publication 3-05, foreign internal defense involves, "participation by civilian and military agencies of a government in any of the action programs taken by another government or other designated organization to free and protect its society from subversion, lawlessness, and insurgency."<sup>7</sup>

Short Take-off and Landing (STOL)-- Joint Publication 1-02 defines Short Takeoff and Landing as, "the ability of an aircraft to clear a 50-foot (15 meters) obstacle within 1,500 feet (450 meters) of commencing takeoff or in landing, to stop within 1,500 feet (450 meters) after passing over a 50-foot (15 meters) obstacle."<sup>8</sup>

Intelligence, Surveillance, and Reconnaissance visualization (ISR visualization)-- According to the Joint Publication 1-02, intelligence, surveillance, and reconnaissance visualization consists of, "The capability to graphically display the current and future locations of intelligence, surveil-

lance, and reconnaissance sensors, their projected platform tracks, vulnerability to threat capabilities and meteorological and oceanographic phenomena, fields of

A-29 Super Tucano light turbo-prop training and attack aircraft. This aircraft is used throughout the world for counterinsurgency operations as well as for flight

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*This study argues that successful accomplishment of the USAF Foreign Internal Defense mission in Afghanistan requires the Embraer A-29 because of its capabilities and demonstrated success in comparison to the less capable Hawker Beechcraft AT-6.*

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regard, tasked collection targets, and products to provide a basis for dynamic re-tasking and time-sensitive decision making."<sup>9</sup>

This study assumes that new special purpose aircraft are required for specific missions in FID. Those missions include drug interdiction, intelligence, surveillance, and reconnaissance missions, light attack, and most importantly flight training for the Afghan Army Air Corps. This study argues that successful accomplishment of the USAF Foreign Internal Defense mission in Afghanistan requires the Embraer A-29 because of its capabilities and demonstrated success in comparison to the less capable Hawker Beechcraft AT-6. Drawing on this analysis, the study will evaluate why the A-29 is needed for employment in current and near-term future FID operations. On the basis of anticipated operational requirements, data will be presented that clearly make evident the superiority of the A-29 over the AT-6.

In December 2011, the US Air Force announced the completion of contract for the Light Support Aircraft (LAS). The contract was awarded to the Sierra Nevada Corporation and its Brazilian partner, Embraer, for production of twenty

training. The Air Force's plan was to use this aircraft in Afghanistan as a platform to train the nation's army air corps. The competition for the contract was between the AT-6, produced by Hawker Beechcraft Corporation based in Wichita, Kansas, and the A-29 Super Tucano. Hawker Beechcraft was disqualified from the competition causing resentment toward the only other contender for the bid. Subsequently, "Hawker Beechcraft Corporation...filed a lawsuit against the US government after the company's AT-6 light attack turboprop...was ejected from the competition for submitting a 'technically unacceptable' bid."<sup>10</sup> In late February 2012, the Air Force canceled the contract with Sierra Nevada Corporation pending investigation of the award decision. Air Force Secretary Michael Donley said in a statement, "While we pursue perfection, we sometimes fall short, and when we do we will take corrective action... Since the acquisition is still in litigation, I can only say that the Air Force Senior Acquisition Executive, David Van Buren, is not satisfied with the quality of the documentation supporting the award decision."<sup>11</sup> Although the contract has been cancelled the question still remains: Is the A-29 the best



choice for the Light Support Aircraft in the context of the foreign internal defense mission?

According to Buck Sexton of *The Blaze*,<sup>12</sup> "In conflict zones around the world, the need for nimble, low-maintenance reconnaissance and light attack capability far outstrips the need for the most advanced 5th generation airframes. The US needs an aerial platform it can give to and train allies on as part of partner building efforts in Afghanistan and other conflict nations."<sup>13</sup> The Air Force must make a decision that will best support the vitally important FID mission. A light support aircraft has been sought after for the war in Afghanistan since 2006. Having an aircraft that is simple and effective in a counterinsurgency environment is key to success. Hawker Beechcraft agrees with that requirement but questions whether that should be a consideration in the decision. Jim Moore, an author for the *Aircraft Owners and Pilots Association* magazine said, "[Hawker] agreed that the overall mission in Afghanistan merits careful consideration, but insisted the Air Force decision was not related to recent developments in the war-torn country. [Hawker] agreed that a "major reassessment" of Afghanistan strategy could make the contract moot, but the procurement process needs to be reformed."<sup>14</sup> Given the recent announcement of the US draw-down in Afghanistan, the need for an effective light air support aircraft is crucial and the best, most appropriate aircraft needs to be identified and acquired without undue delay. According to *Defense Tech*,

The LAS mission requires a non-developmental solution that provides the versatility, engagement, and persistence that the war fighter needs in a counterinsurgency environment, at a significantly lower cost than fighter jets. That aircraft must offer intelligence, surveillance, and reconnaissance (ISR) capabilities; deliver a wide variety of munitions configurations, including precision guided munitions; and operate in extremely rugged terrain and austere conditions.<sup>15</sup>

The mission is incredibly important not only for the successful conclusion of the war in Afghanistan, but also for future counterinsurgency operation and for the success of the continuing FID mission. As budget worries continue to grow, the contract for a LAS aircraft may be scraped completely. "There's no way to put a happy face on this," Chief of the Staff General Norton



USAF T-6 Texan II Trainer

Schwartz said, noting that funding for up to twenty aircraft expires in 2013. Schwartz said the aircraft is vital to Afghanistan's military. "We will work with all dispatch."<sup>16</sup>

An objective evaluation of the Super Tucano and AT-6 will help to resolve the choice the Air Force must make. The Super Tucano, or Super T, currently is the only combat-proven light attack aircraft in the world. This does not mean the AT-6 lacks the capabilities of a good light attack platform, but it is still a conceptual design

that has not been tested in combat nor has it had the opportunity to prove its abilities in austere conditions. In contrast, the Super T has been widely used throughout Latin America for many counterinsurgency operations in which it has demonstrated the effectiveness of its simple design and its flexibility. According to an article in the *Wall Street Journal*,

The A-29 Super Tucano was built specifically for counterinsurgency missions and is currently used by six air forces...It has proven extremely capable for LAS missions and is credited with helping the Colombian government defeat the FARC and other governments' counter illegal activities. The more than 150 units now in operation around the world have logged over 130,000 flight hours, including more than 18,000 combat hours without any combat loss.<sup>17</sup>

This operational record points out the capabilities of the Super T, which possesses many other added advantages over an unproven aircraft. For example, the Super T is the only aircraft with the proven ability to carry and deliver precision guided munitions while operating in extremely rugged terrain. This record of accomplishment is worth noting because the ideal light attack aircraft must be able to provide many different operational capabilities at a relatively low cost.

In terms of comparative dimensions, the Super T is a significantly larger aircraft than the AT-6 and sits higher off the ground in order to provide stability on unimproved runways. It combines a heavier platform with more rugged landing gear that is more suitable for the many unimproved runways in Afghanistan and elsewhere in the third world. The Super T's larger landing gear and broader



stance produces a greater distance between the wheels making them more suitable for rough landings. These factors contribute to more stable handling, especially for newer pilots who tend to make harder landings.

Another key difference between the two aircraft is their respective weapon systems and payload. The Super T has two internally mounted guns that do not take

The A-29 has been tested and proven. It is not a concept design that may or may not work. Time is running out to begin production of the aircraft and to ensure that US Air Force pilots are fully qualified to fly it under demanding operating conditions. For all of the foregoing reasons, the Super Tucano represents the best option for a timely decision and is reflected in a letter from Representative Allen B. West to the Secretary of the Air

the systems employed in the T-6 trainer. Defense Analyst Daniel Goure states, "Another reason that the AT-6 makes sense is because it facilitates an easy and natural relationship with the US Air Force, given its experience with the T-6 trainer and partner countries. US pilots and maintainers would not have to learn how to fly a different aircraft in order to train foreign air force personnel."<sup>21</sup> This experience would require less training for USAF instructors assigned to train pilots of other nations. Secondly, understanding of maintenance issues, parts, and familiarity with the aircraft already exist because the T-6 is an integral part of pilot training for both the Air Force and the Navy. Nonetheless, that does not mean it is ready for less sophisticated nations such as Afghanistan. When dealing with less technically competent countries and with different languages, the overall simplicity of an aircraft must play a vital role in the procurement decision. The availability of an aircraft that already is in use worldwide is important to note. Although the T-6 is currently fielded in Iraq, Iraq is the only country outside of the US to operate this aircraft. In comparison,

The A-29 Super Tucano is the only aircraft in LAS competition that has a combat record. It has been in service for seven years and been flown in actual combat by five nations, with no combat losses. Embraer – as well as this specific aircraft, the A-29 Super Tucano – has a strong military track record. Embraer has supplied more than 1,300 aircraft to armed forces in 31 nations. The A-29 Super Tucano is operational and combat-proven and flying with nations similar to those targeted for the LAS mission. More than 173 A-29 Super Ts are in use or on-order by armed forces around the

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up any vital hard points allowing them to be used for other weapons. In contrast, "The AT-6 carries no weapons in its native configuration and therefore must give up a vital 'hard point' under each wing for a gun pod exacting a penalty in both payload and performance."<sup>18</sup> The Tucano can also accommodate 133 fully qualified NATO ordnance and operational weapons load configurations.

A significant additional mission for the LAS aircraft will be conducting ISR for sustained timeframes. The Super Tucano has a fully integrated EO/IR imaging system positioned under the nose for maximum effect, to include space and visibility. Sierra Nevada Corporation points out that, "Due to a lack of space and balance, the AT-6 places its thermal imaging system under the cockpit, which leads to degraded effectiveness whenever the plane drops a wing to turn."<sup>19</sup> In contrast, the Tucano cockpit contains state of the art displays and is configured for ease of handling.

Force,

The safety of our men and women on the ground in Afghanistan and the security of our nation depend upon an Afghan military that is capable of defending against the Taliban and other extremist organizations. A light air support capability is essential to this objective.... The road to providing US commanders in Afghanistan with the light air support capability they urgently requested has been paved with numerous unnecessary delays. These delays are endangering our security, wasting taxpayer dollars, and prevent us from putting Americans to work building these aircraft. I hope that the Air Force has a plan for minimizing further delay and mitigating the adverse affects of this latest action.<sup>20</sup>

As for the AT-6, it is a great trainer aircraft and as has been used very effectively for that purpose for many years. The problem involves taking an aircraft purposely built for training and attempting to turn it into a combat-capable aircraft. Of course, the AT-6 does have a few unique advantages. Every US Air Force and Navy pilot in the grade of senior lieutenant or below has recent experience with



world. It has more than 100,000 flight hours and 16,000 combat hours, with no combat losses, and it is certified for more than 130 weapon configurations. The Super Tucano also is the plane that was tested and requested by the US Navy for Imminent Fury.<sup>22</sup>

Currently the focus is on a 2011 lawsuit filed by Hawker Beechcraft for being eliminated from the competition and the recent cancellation of the project while Hawker Beechcraft's objections are evaluated. But the true focus should be on making sure whatever aircraft is selected represents the best choice to support the needs of the military. Secondary questions such as how many more jobs would be produced in America should not be an issue while the nation is still at war and requires the most capable LAS aircraft to help complete the mission. The focus for many is on the fact that the A-29 is a Brazilian aircraft. However, Embraer has teamed up with the US Sierra Nevada Corporation to compete for the LAS bid and ultimately will bring additional jobs and money to the US through subcontracts with American companies. Sierra Nevada Corporation states, "The A-29 Super Tucano will be built in Jacksonville, FL, by American workers with parts from American companies. Training on the aircraft will be provided in Clovis, NM. More than 60 US suppliers in 19 states will supply parts or services for this contract. At least 1,200 US jobs will be supported through this contract."<sup>23</sup>

The mission in Afghanistan includes a variety of coalition partners. The availability of an aircraft that is familiar to some partners increases the likelihood of effectively training the new Afghan

pilots.<sup>24</sup> As one experienced fighter pilot states, "The A-29 Super T has the same Hands-on-Throttle-and-Stick (HOTAS) and cockpit configuration as a modern fourth generation fighter aircraft. Yet, it is highly efficient to operate and easy to fly. It has unrivaled endurance, giving the war fighter the persistent ISR, kinetic, or training support."<sup>25</sup> The Super T is perfect for the low altitude missions expected of it. "Crew survivability is ensured through armor protection and state-of-the-art provisions such as a Missile Approach Warning System and Radar Warning Receiver, alongside chaff and flares dispensers."<sup>26</sup> Giving further credence to its potential survivability is the Super T's successful track record in its current training environment. "The Super Tucano's airframe was designed for single- and twin-seater versions and can withstand +7G/-3.5G loads. The aircraft's structure is corrosion-protected and the side-hinged canopy has a windshield capable of withstanding a bird strike at 270 kts."<sup>27</sup>

The terrain of Afghanistan is rugged and unforgiving at times for inexperienced pilots. Flying an aircraft that offers added safety and protection in this stern environment is an important consideration. The need for an aircraft to support the FID and light attack mission is a pressing one for commanders in Afghanistan. An objective evaluation clearly suggests the Super Tucano is the best choice for current and future LAS missions

around the world.

Although both aircraft, the Hawker Beechcraft AT-6 and Embraer A-29 Super Tucano, have their own unique strengths, the A-29 Super Tucano is the best choice for the situation we face in Afghanistan. Moreover, this aircraft will also provide a superb platform for future FID missions worldwide, especially those conducted in South America. The LAS contract requires a low cost solu-



#### Indonesian Air Force Tuscanos

tion for an aircraft that offers the engagement and persistence a war fighter needs in a counter insurgency environment. Clearly, the Super T best meets these needs. "The Super Tucano meets all the requirements of the LAS mission and then some. It provides the highly advanced avionics and communications that pilots need. It makes no compromises when it comes to crew survivability, aircraft controllability or combat effectiveness."<sup>28</sup> The Super Tucano is ready for employment in the harshest conditions and is the best choice to meet the Air Force's needs.

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1 Wray Johnson, "Ends Versus Means: The 6th Special Operations Squadron and the Icarus Syndrome," *Air and Space Power Journal*, <http://www.airpower.au.af.mil/airchronicles/cc/WJohnson.html>



2 Richard Comer, "An Irregular Challenge," *Armed Forces Journal*, <http://www.armedforcesjournal.com/2008/02/3290589>

3 Wray Johnson, "Whither Aviation Foreign Internal Defense," *Airpower Journal* 11, no. 1 (Spring 1997): 66-85, <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj97/spr97/johnson.html>

4 Ibid.

5 Ibid.

6 Limitations: The limitations of this study pertain to the recent selection of the light attack aircraft for the FID mission and the needs for this aircraft. This study will not address the political dimensions of foreign aircraft versus American-made aircraft. Training and maintenance are critical to the FID mission, and the capabilities of the two aircraft being compared will address the issues at hand. This study will not address any other aircraft than the A-29 and the AT-6. These aircraft are the primary contenders for the FID and Light Attack Mission (LAM) and therefore will be the primary focus of this study.

7 Joint Chiefs of Staff, *Doctrine for Joint Special Operations*, Joint Publication 3-05 (Washington, DC: 17 December 2003), GL-7.

8 Ibid., 424.

9 Ibid., 233.

10 Dave Majumdar, "USAF Halts Work on Attack Planes for Afghans," *Defense News*, January 9, 2012: 26.

11 Andrea Shalal-Esa, Air Force scraps deal with Embraer, Sierra Nevada, February 28, 2012, <http://www.reuters.com/article/2012/02/29/us-embraer-snc-aircraft-idUSTRE81R1W920120229>

12 *The Blaze* is a magazine that focuses on topics ranging from culture to politics. The Authors have an interest in new dynamics that are important today.

13 Buck Sexton, *The Blaze*, January 3, 2012, <http://www.theblaze.com/stories/check-out-the-super-tucano-counterinsurgency-fighter-plane-in-action/>

14 Jim Moore, Air Force halts controversial contract: Afghan light air support deal may be dead, analysts say, February 28, 2012. <http://www.aopa.org/aircraft/articles/2012/120228air-force-halts-controversial-contract.html>

15 "Super Tucano Wins USAF's Light Attack Contest," December 31, 2011, <http://www.defensetech.org/2011/12/31/embraer-wins-usafs-light-attack-contest>

16 Ibid.

17 PR Newswire, "A-29 Super Tucano Wins Air Force Bid for Light Air Support Mission," *Wall Street Journal*, February 2012: 1.

18 Sierra Nevada Corporation, Built for the Mission, 2009. <http://www.built-forthemission.com/a-29-vs-at-6.php>

19 Ibid.

20 Ibid.

21 Daniel Goure, "AT-6 Meets The Need For An Affordable Light Attack Aircraft," April 27, 2011, <http://www.lexingtoninstitute.org/at-6-meets-the-need-for-an-affordable-effective-light-attack-aircraft?a=1&c=1171>

22 Sierra Nevada Corporation, Built for the Mission, 2009. <http://www.built-forthemission.com/a-29-vs-at-6.php>

23 Ibid.

24 The A-29 Super Tucano is flown in some African and Latin American countries, including US allies Brazil and Columbia.

25 Ibid.

26 Sexton.

27 Ibid.

28 Sierra Nevada Corporation.



Where the acquisition decisions are made